
Space Weather Forecast

Issued on Thursday, 05 October 2023 at 01:11 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales <https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales>

Space Weather Forecast Headline: Chance of Moderate-class flares throughout. Slight chance of isolated Minor Storm intervals on Day 2 (06 Oct).

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Activity has been Low, with only minor Common-class flares in the last 24 hours. There are now nine sunspot regions on the visible disc. The largest region is just approaching north centre disc, however it still has a fairly straightforward magnetic structure. Another region just to the north of the largest region has shown a little growth in the trailing spot. A region in the southwest is showing some hints of minor magnetic complexity developing on one of the intermediate spots. The other regions appear mostly small and simple at the present time. No new Earth-directed Coronal Mass Ejections (CMEs) have been observed in the last 24 hours.

Solar Wind / Geomagnetic Activity: Solar winds were at background to slightly elevated levels, with no particular enhancement in the last 24 hours. Wind speeds were mostly between 330-430 km/s. The interplanetary magnetic field was weak to moderate, with the north-south component varying moderately but mostly southward directed. Geomagnetic activity was Quiet to Unsettled (Kp 1-3).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) remained at background levels, with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Mainly Low activity is expected, but with a chance of isolated Moderate-class flares.

Solar Wind / Geomagnetic Activity: An eruption on 02 October may have resulted in a faint, rather slow Earth-directed CME. Confidence is low in both the likelihood of this feature reaching Earth, and in the timing of any arrival. This may arrive at Earth either late on Day 1 (05 Oct) or more likely in the first half of Day 2 (06 Oct). No other CMEs feature in the forecast. No significant coronal hole fast winds are forecast.

Geomagnetic activity is expected to be mostly Quiet to Unsettled. This may increase to Unsettled to Active should the aforementioned CME arrive, with a slight chance of G1/Minor Storm intervals.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is most likely to remain at background levels, with a very low risk of enhancements from the current sunspots on the disc.

Geomagnetic Storms:

Geo-Magnetic Storm	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability (Exceedance)			(%)	(%)	(%)	(%)
Minor or Moderate	G1 to G2	No	5	15	1	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability			(%)	(%)	(%)	(%)
Active	R1-R2 M Class	No	30	30	30	30
Very Active	R3 to R5 X	No	2	2	2	2

Solar Radiation Storms - (High Energy Protons):

Radiation Storms	Level (cm ⁻² sr ⁻¹ s ⁻¹)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability (Exceedance)			(%)	(%)	(%)	(%)
Active	≥ S1	No	2	5	5	5
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = cm⁻²sr⁻¹s⁻¹)